

# Direction flag

The **direction flag** is a flag that controls the *left-to-right* or *right-to-left* direction of string processing,<sup>[1]</sup> stored in the FLAGS register on all x86-compatible CPUs.<sup>[2]</sup> It is bit number 10.

This flag is used to determine the direction ('forward' or 'backward') in which several bytes of data will be copied from one place in the memory, to another. The direction is important mainly when the original data position in memory and the target data position overlap.

- If it is set to 0 (using the clear-direction-flag instruction CLD) — it means that string is processed beginning from lowest to highest address; such instructions mode is called *auto-incrementing* mode. Both the source index and destination index (like MOVSB) will increase them;
- In case it is set to 1 (using the set-direction-flag instruction STD) — the string is processed from highest to lowest address. This is called *auto-decrementing* mode.

| <u>x86-instruction</u> | Meaning              | Flag | Notes                            |                   |
|------------------------|----------------------|------|----------------------------------|-------------------|
|                        |                      |      | Direction of string processing   | Mode title        |
| CLD                    | clear direction flag | 0    | lowest-to-highest <u>address</u> | auto-incrementing |
| STD                    | set direction flag   | 1    | highest-to-lowest address        | auto-decrementing |

## References

1. 3.8.1 Carry and Direction Flag Control Instructions (<http://www.logix.cz/michal/doc/i386/chp03-08.htm>)
2. Direction Flag ([http://msdn.microsoft.com/en-us/library/7td56tzs\(VS.80\).aspx](http://msdn.microsoft.com/en-us/library/7td56tzs(VS.80).aspx)) at MSDN

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